

BOOK REVIEW.

THE GENUS *MURALTIA*. By Margaret R. Levyns. Jnl. S.A.F. Bot., Suppl. Vol. II, 1954. Cape Town. pp. 247. 2 plates, 37 maps and 87 figs. 35s.

The genus *Muraltia*, in the Family Polygalaceae, is, unlike the large cosmopolitan genus *Polygala*, entirely confined to South Africa. In most of the species the small pink or purple flowers are rather inconspicuous and many of them are superficially very similar in appearance. The flowers are far less showy than those of *Polygala* to which *Muraltia* might be described as a poor relation.

Muraltia has hitherto been looked upon by botanists as a very difficult genus, and until recent years it has been rather neglected by collectors, particularly amateurs, perhaps owing to the difficulty in naming the plants from existing literature. Almost all previous study of the genus has been founded on dried specimens in Europe, without field study, and, as Dr. Levyns has shown, this genus affords a striking example of the disadvantages, one might almost say futility, of purely herbarium work. Dr. Levyns emphasises the importance of the living plant and describes the rapid and very unequal development of the parts of each organ of the flower from the time of the emergence of the corolla to the moment of pollination. These changes are explained in detail and illustrated in Figure 1, in the case of the common species *Muraltia heisteria*.

It is therefore clear that when describing species, comparative measurements of the floral parts must be made at the same developmental stage. For this reason measurements given in most previous descriptions are almost meaningless because the stage of floral development is not given. In this revision the descriptions of the floral parts are all made at the same stage, i.e. when the crests on the carina have expanded and the maximum length of the parts has been attained. It is also shown that the leaf characters, to which emphasis was given in former descriptions, show marked changes in response to habitat and are of little taxonomic value.

Full notes on the morphology of the pollen grains in different species are given and the author shows that all the species are naturally self-pollinated, although hybridisation is sometimes brought about by insect pollination.

In several recent revisions of some of our fairly large South African genera, founded on field study, it has been noticed that although botanical exploration has been made easier by motor transport and, quite naturally, a large number of species new to botanical science has been discovered, yet the total number of species upheld has been reduced. *Muraltia* is

no exception. Harvey in 1859, in the *Flora Capensis* Vol I, recognised 51 species, but by the time the author began her study of the genus, 67 further species had been described, principally by the botanists Chodat and Schlechter, bringing the total up to 118. Only 115 species are now upheld and since 37 of these are new species, this means that 40 of the 'herbarium-created' species are not deemed worthy of retention and have been sunk.

This drastic amalgamation or sinking of species is explained by the fact that many of those which have hitherto been thought separable have been found, as the result of more intensive field study, to belong to a series of geographical micro-variants, in which the extremes look at first sight sufficiently different for taxonomic separation. As more and more slight variants are discovered in such a series, it becomes apparent that the whole chain must be reduced to one very variable species.

The species are superficially so much alike that ordinary illustrations of the complete plants would be of little value. The author has therefore provided clear enlarged line drawings of the leaves, the floral organs, the capsule and the seeds of each species, variety and form and these 81 figures greatly help the reader in following the key and descriptions. All these figures have been drawn to the same scale which simplifies their comparison.

Full notes on the geographical distribution and the deductions that can be made as regards the gradual development and spread of the genus are accompanied by 37 maps on which the recorded occurrences of each species are plotted. Taking the genus as a whole, the highest concentration of species occurs in the Caledon Division and, with a very few minor exceptions, the number diminishes gradually to the northward to Namaqualand and to the eastward to the Uitenhage Division. The genus is, however, divided into two subgenera, *Psiloclada* with 16 species and *Muraltia* with 99. In the more primitive subgenus *Psiloclada* most of the species are confined to the mountains and show their highest concentration in the mountainous Divisions of Tulbagh and Worcester. Several species have a wide general distribution, a few show a marked discontinuity in distribution which the author suggests may be due to past geological changes, while 37 species are exceedingly local, occurring mostly in the coastal areas which are known to have been submerged by the sea in recent geological times. Finally some very interesting notes are given on hybridisation in the Cape Peninsula.

The monograph is the result of eight years of study during which the author collected very widely in the Western Province and was also able to inspect the collections in the principal herbaria in Europe. She pays a special tribute to the help given to her by Miss E. Esterhuysen

for her copious collecting, especially in the high mountains, and for her valuable field notes, many of her specimens having proved to be new species.

Dr. Levyns' revision of *Muraltia* is quite the most detailed monograph which has appeared on any large South African genus and she deserves the thanks of all botanists for disentangling the many problems in nomenclature which have chiefly arisen through past misidentification, and for making it possible to distinguish the species, a task that has previously been impossible from existing literature. Such work could never have been achieved from the examination of herbarium specimens alone.

This Supplementary Volume of the *Journal of South African Botany* has been very well produced. The figures and maps have been very clearly printed and one may search in vain for misprints.

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